CLOUD COMPUTING AND NETWORKING MANAGEMENT

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ABSTRACT :-

Cloud computing is a transformative paragelism in information technology and may well be deemed as harbinges of the next stage in the internet revolution. Cloud computing promise's to provide everything from computing power to computing infrastructure, to be delivered as a service wherever and whenever required.

Keywords :-Cloud computing, networking, management characteristics, strategies, systems, challenges.

INTRODUCTION :-

Cloud computing is a term that applies to applications and data storage that are delivered over the internet or via wireless technology. The individual users device (computer, cell phone etc.) only provides an interact to internet with the computer by James Bucker.

The cloud is essentially a metaphorter the internet. Marketers have further popularized the phrase in the cloud to refer to software, platforms and infrastructure that are sold as a service remotely through the internet. These cloud services may be offered in a public, private or hybrid network, Google, Amazon, Oracle, Cloud, Saled force, Zoho and Micro soft Azure are some well known cloud vendors.

OPEN SOURCE FRAMWORK :-

One of the major advantages in cloud computation is that software solutions are mostly based on open source and not proprietary driven. A number of open source developers work together for a common goal. Software is released under open source licensing agreement that allows any one to improve upon the existing software coding and subsequently the next version is released. This is more like a community driven approach where software developing community work together and no licensing fee is to be paid by the end users.

Open source framework enables development of the software in commonly available hardware infrastructure, supplied by multiple vendors.

HISTORICAL DEVELOPMENT OF CLOUD COMPUTING

Cloud computing is not a new technology it is a new service delivery model. Many of the underlying technologies that form the foundation of cloud computing have existed for quite sometime now. During 1960s large scale mainframe computer resources used to be shared by different user groups. During 1970s IBM released an operating system called virtual machines that allowed mainframe systems to have multiple virtual systems or VMs on a single physical computer.

Amazon played a key role in the development of cloud computing initially renting their data center to external customers. In 2006 they launched Amazon Elastic cloud computing (EC_2) as a utility computing platform. After that several vendors including Google. IBM. Sun HP, Microsoft, Yahoo released cloud solutions.

CLOUD CHARACTERISTICS :-

Cloud computing provider ICT resources in a dynamic and scalable manner over a network. It allows consumers and business to use applications without investing in costly hardware and software. The

technology allows efficient computing in terms of storage, memory processing and band with. As a resource provisioning model, cloud computing integrates a number of existing technologies like grid computing, utility computing, service oriented, architecture, internet of things etc.

Some of the qualitative aspects of cloud computing are:-

ELASTICTY:

It allows cloud users to request services dynamically as per requirements. Provisioning of service by the cloud provider is adaptable and cloud users as per the usage. Performance is monitored and consistent.

AVAILABILITY :

It refers to specific requirement of the out source services made available by cloud service provider. Quality of service is measured in terms of response time and through put.

RELIABILITY :

It represents the ability to ensure constant system operation without disruption.

AGILITY :

It is a measure of cloud provides ability to adapt online to changes in resources demand.
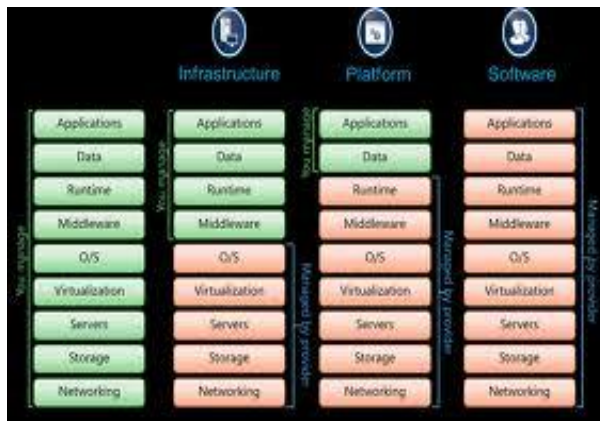
SERVICE MODELS :

Since a cloud is an underlying delivery mechanism, computing ability can be provisioned on three levels. Software, Platform and infrastructure.

SOFTWARE AS A SERVICE :- (SaaS)

It is a delivery model in which application are accessed by users using a simple interface like web browser. The users are not concerned with underlying cloud infrastructure including network, servers, operating systems, storage or platform. This model also eliminates the need to install and the run the application on the local computer. Now SaaS has a become a common delivery model for many business applications such as social media, online games, including accounting, collaboration and management, Face book, Net suit, Google, Docs, Web mail are a few example of SaaS model.

PLATFORM AS A SERICE (PaaS) :-
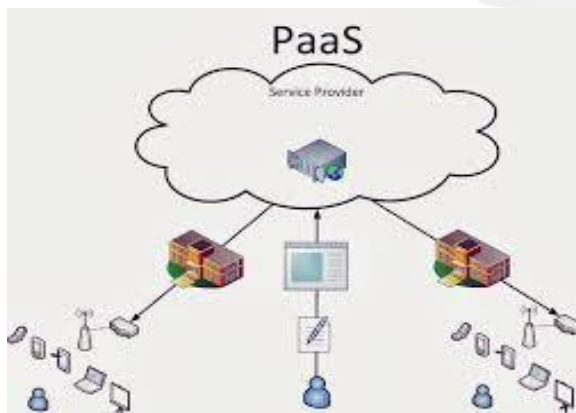
It offers a high level integrated environment to build, test, deploy and host customer created or acquired applications. Customers of PaaS do not need to manage the underlying infrastructure, but need to have control over the deployed applications and their hosting environment configurations. Typical examples of PaaS are Google, App Engine.

In 2012 there was five hundred million user of cloud computing now in 2017 there will be one thousand three hundred million users estimatelly. It is the fast trend of users.

CLOUD MANAGEMENT :-

Legacy management infrastructures, which are based on the concept of dedicated system relationship and architecture constructs, are not well suited to cloud environments where instance are continually launched and decommissioned. Instead, the dynamic nature of cloud computing requires monitoring and management tools that are adaptable, extensible and customizable.

CLOUD MANAGEMENT CHALLENGES :-

Cloud computing presents a number of management challenges. Companies using public clouds do not have ownership of the equipment hosting the cloud environment, and because the environment is not contained within their own networks, public cloud customers do not have full visibility or control. Users of public cloud services must also integrate with architecture defined by the cloud provider, using its specific parameters for working with cloud components. Integration includes tying into the cloud APIs for configuring IP addresses, subnets, firewalls and data service functions for storage. Because control of these functioned is based on the cloud provider's infrastructure and services, public cloud users must integrate with the cloud infrastructure management.

Capacity management is a challenge for both public and private cloud environment because end users have the ability to deploy applications using self-service portals. Applications of all sizes may appear in the environment, consume an unpredictable amount of resources, then disappear at any time.

Chargeback or pricing resource use on a granular basis-is a challenge for both public and private cloud environments. Chargeback is a challenge for public cloud service providers because they must price their services competitively while still creating profit. Users of public

cloud services may find chargeback challenging because it is difficult for IT groups to assess actual resource costs on a granular basis due to overlapping resources within an organization that may be paid for by an individual business unit, such as electrical power. For private cloud operators, chargeback is fairly straightforward, but the challenge lies in guessing how to allocated resources as closely as possible to actual resource usage to achieve the greatest operational efficiency. Exceeding budget can be a risk.

Hybrid cloud environments, which combine public and private cloud services, sometimes with traditional infrastructure elements, present their own set of management challenges. These include security concerns if sensitive data lands on public cloud servers, budget concerns around overuse of storage or bandwidth and proliferation of mismanaged images. Managing the information flow in a hybrid cloud environment is also a significant challenge. On premises clouds must share information with applications hosted off-premise by public cloud providers and this information may change constantly. Hybrid cloud environments also typically include a complex mix of policies permissions and limits that must be managed consistently across both public and private clouds.

CLOUD MANAGEMENT STRATEGIES :-

Public clouds are managed by public cloud service providers, which include the public cloud environments servers, storage, networking and data center operations. Users of public cloud services are generally select from three basis categories:

- User self-provisioning Customers purchased cloud services directly from the provider, typically through a web form or console interface. The customer pays on a per-transaction basis.

- Advance provisioning Customers contract in advance a predetermined amount of resources, which are prepared in advance of service. The customer pays a flat fee or a monthly fee.

- Dynamic provisioning: The provider allocates resources when the customer needs them, then decommissions them when they are no longer needed. The customer is charged on a pay-per-use basis.

Managing a private cloud requires software tools to help create a virtualized pool of computer resources, provide a self-service portal for end users and handle security, resources allocation, tracking and billing. Management tools for private clouds tend to be service driven, as opposed to resource driven, because cloud environments are typically highly virtualized and organized in terms of portable workloads.

In hybrid cloud environments, computer, network and storage resources must be managed across multiple domains, so a good management strategy should start by defining what needs to be managed and where and how to do it. Policies to help govern these domains should include configuration and installation of images, access control and budgeting and reporting. Access control often includes the use of Single sign-on (SSO), in which a user logs in once and gains access to all systems without being prompted to log in again at each of them.

ASPECTS OF CLOUD MANAGEMENT SYSTEMS :-

A cloud management system is a combination of software and technologies designed to manage cloud environments. The industry has responded to the management challenges of cloud computing with cloud management systems. HP, Novell, Eucalyptus, Open Nebula, Citrix and are among the vendors that have management systems specifically for managing cloud environments.

At minimum, a cloud management solution should be able to manage a pool of heterogeneous compute resources, provide access to

end users, monitor security, manage resource allocation and manage tracking. For composite applications, cloud management solutions also encompass frameworks for workflow mapping and management.

Enterprises with large-scale cloud implementations may require more robust cloud management tools that include specific characteristics such as the ability to manage multiple platforms from a single point of reference, include intelligent analytics to automate processes like application lifecycle management. And high-end cloud management tools should also be able to handle system failure automatically with capabilities such as self-monitoring, an explicit notification mechanism, and include failover and self-healing capabilities. Cisco recently launched its Inter Cloud solution to provide flexibility to dynamically manage workloads across public and private cloud environments.

CONCLUSION:-

Cloud computing is an evolving service provision model, where software, platform, infrastructure, data and hardware can be directly delivered as a service to the end customers. This ensures better utilization of resources increased efficiency and reduced operational cost. Cloud computing has become a new trend in the information and communication technology domain and has gained significant commercial success over past years. As smart mobile phone users are increasing rapidly, mobile cloud computing has also become a potent trend. Challenges like data security and standardizations are foundation for future research and development, As of now, it can deny said that cloud computing is going to have a huge impact on all sectors. No one can any that cloud computing will play a pivotal role in the next decade.

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